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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,916	12/08/2003	Minehiro Tonosaki	246219US6	9663
22850	7590	04/30/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER LÉO, LEONARD R	
			ART UNIT	PAPER NUMBER
			3744	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/30/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/30/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/728,916

Applicant(s)

TONOSAKI ET AL.

Examiner

Leonard R. Leo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11, 12, 14-18 and 20-47 is/are pending in the application.
- 4a) Of the above claim(s) 42, 43, 45 and 46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11, 12, 14-18, 20-29, 31-41, 44 and 47 is/are rejected.
- 7) ☒ Claim(s) 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/07.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of the species IA of SiO₂ and the species IB of grooves in the reply filed on January 9, 2007 is acknowledged. The traversal is on the ground(s) that the inventions have not been shown to be distinct as per MPEP 803 and there would be no burden on the Examiner. This is not found persuasive because the restriction is between species, not inventions. Therefore, distinctness is not a requirement. The species are independent as per MPEP 808.01(a). The Examiner deems a search and examination of all species to be a burden, unless applicant states for the record the species are obvious variants of one another.

The requirement is still deemed proper and is therefore made FINAL.

Claims 42-43 and 45-46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Claim Objections

Claim 30 is objected to because of the following informalities: the recitation of "an" in line 6 should read -- and --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 33 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described

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in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification lacks an adequate written description of the invention. There is no basis for "stable material is present only on the surface of the wick."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-12, 14-18, 20-21, 23-29, 31-41, 44 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirshberg et al in view of Steele et al or Uchida et al.

Kirshberg et al discloses a heat-transport device comprising a refrigerant; a glass 22 and substrate 21 defining an evaporator 10, a condenser 12, a liquid passage 16, a vapor passage 14, and a wick 24 in the evaporator (Figure 2) and a silicon oxide coating 30 (Figure 5a), but does not disclose a silicon dioxide (SiO₂) coating.

Steele et al or Uchida et al discloses a heat exchanger comprising a heat transfer surface and a hydrophilic coating of silicon dioxide or silicate for the purpose of improving wetting and wicking properties to improve heat transfer.

Since Kirshberg et al and Steele et al or Uchida et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Steele et al or Uchida et al would have been recognized in the pertinent art of Kirshberg et al.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Kirshberg et al a hydrophilic coating of silicon dioxide or silicate for the purpose of improving wetting and wicking properties to improve heat transfer as recognized by Steele et al or Uchida et al.

Regarding claims 12 and 18, Kirshberg et al discloses the substrate 21 is silicon.

Regarding claims 14, 20 and 29, Steele et al or Uchida et al discloses the silicon dioxide is a hydrophilic, i.e. an affinity for water (H₂O). Furthermore, water is a well-known working fluid in heat pipes.

Regarding claims 15, 21 and 31-35, the silicon dioxide coating as taught by Steele et al or Uchida et al would be disposed wherever enhanced wetting and wicking is required. In this instance, only the wick of Kirshberg et al on glass 22 would be coated to provide enhancement.

Regarding claim 16, the recitation of "by anodic bonding" is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance. See MPEP 2113.

Regarding claims 23 and 24, inherently, the silicon dioxide coating is formed by an oxidation process. Furthermore, Kirshberg et al discloses oxidizing layer 30.

Regarding claim 25, the recitation of "ion implanted" is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance. See MPEP 2113.

Regarding claims 26 and 37, ion implantation and chemical vapor deposition are obvious variants of thermal oxidation of Kirshberg et al.

Regarding claims 27-28, the wick 24 of Kirshberg et al are grooves.

Regarding claim 36, the recitation of "by chemical vapor deposition" is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance. See MPEP 2113.

Regarding claims 38-41, the similar coating of Steele et al or Uchida et al is believed to function in a manner similar to applicants. See also MPEP 2114.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirshberg et al in view of Steele et al or Uchida et al as applied to claims 11-12, 14-18, 20-21, 23-29, 31-41, 44 and 47 above, and further in view of Pomerantz.

The combined teachings of Kirshberg et al and Steele et al or Uchida et al lacks anodic bonding of the glass and substrate.

Pomerantz discloses a method of anodic bonding a semiconductor (i.e. silicon) material and glass for the purpose of ease of manufacture and cost effectiveness.

Since Kirshberg et al and Pomerantz are both from the same field of endeavor and/or analogous art, the purpose disclosed by Pomerantz would have been recognized in the pertinent art of Kirshberg et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Kirshberg et al anodic bonding for the purpose of ease of manufacture and cost effectiveness as recognized by Pomerantz.

Allowable Subject Matter

Claim 30 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The Examiner agrees the silane coating of Schutt et al is not the same as the silicon dioxide (SiO₂) coating as claimed.

No further comments are deemed necessary at this time.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in cursive script, appearing to read "Leonard R. Leo".

LEONARD R. LEO
PRIMARY EXAMINER
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April 23, 2007